

## Capstone Project 2022

# “How can climate fiction motivate people to take climate action?”

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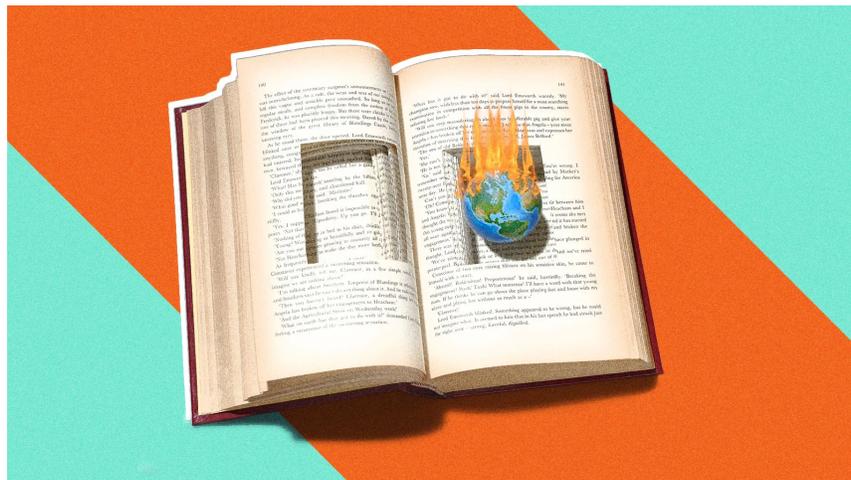
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## Abstract

This research aims to evaluate how climate fiction can contribute towards climate action, with a focus on understanding the exact role it plays and the reach and influence that it has. Climate fiction, a newly emerged literary genre, addresses urgent threats and future scenarios following climate change (Glass, 2013) and takes either a utopian (Cogbill-Seiders, 2018) or dystopian (Safaeyan, 2022) take on the future. The research about “*How can climate fiction motivate people to take climate action?*” was carried out by conducting a thorough literature review and a complementary study about the perceptions of climate fiction in higher education among university students was conducted. Both the research and survey showed that climate fiction can motivate action by activating emotional responses, it has the potential to raise awareness and foster a deeper understanding about climate change, and it can encourage the reader through calls to action. Unfortunately, one could assume that only pro-environmental-minded people would expose themselves to this type of literature. In educational settings, climate fiction could reach a wider audience, but the application of climate fiction in higher education requires further research and careful consideration.

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## 1. Introduction

### *1.1 Climate Change*

Anthropogenically induced climate change is one of the most pressing issues of our contemporary society, and action has to be urgently taken in order to mitigate and adapt to the effects on our globe (Masson-Delmotte, 2021; Stocker et al., 2013; UNFCCC, 2015). The Intergovernmental Panel on Climate Change (IPCC), founded in 1988, aims to evaluate and inform about climate change. The first assessment report was published in 1990 and stated that greenhouse gas emissions due to human activities greatly increased the natural greenhouse effect. They warned that if humanity does not make changes to its current emission levels and maintains these emission levels, the twenty-first century would experience global warming effects greater than in the past 10,000 years (Milner & Burgmann, 2020).

The enhancement of the greenhouse effect has devastating effects on the global climate and the earth systems. Depending on the different shared socioeconomic pathways explored by the IPCC, the projected change in global temperature can be running from 0.4 to 2.6 degrees celsius between the periods of 1986 to 2005 and 2046 to 2065, with the estimations until 2100 being even higher (Stocker et al., 2013). The atmosphere, oceans, and land are warming up, leading to more extreme weather events, such as more frequent and severe storms, floods, heat waves and droughts, as well as sea-level rise (Masson-Delmotte, 2021; Milner & Burgmann, 2020). Tipping points are an acute danger of global warming. They are critical thresholds of climatic resilience of specific systems, for example, the melting of the Antarctic ice caps. If a tipping point is reached, a cascading effect of abrupt and large changes begins, which significantly accelerates global warming (Jacobson et al., 2000).

Furthermore, global warming increases risks and vulnerabilities, both to humans and the world around us (Milner & Burgmann, 2020). The term ‘Anthropocene’, first used by Eugene Stoermer in the 1980s, is used to describe the era in which the human influence on the Earth's systems is significant and severe (Gibson & Whyte, 2022; Milner & Burgmann, 2020). Despite warnings from the IPCC and other climate scientists, carbon emissions, highly contributing to the

greenhouse effect, continuously increase and economic growth is promoted (Milner & Burgmann, 2020).

### ***1.2 Climate action***

Climate action can be taken on a global, national, collective, corporate, and individual level in order to help reduce the effects of climate change. In order to mitigate the effects of global warming, 196 parties of the United Nations adopted the Paris Agreement in 2015, a treaty aimed at limiting the temperature increase to 1.5 or 2 degrees celsius compared to pre-industrial levels (UNFCCC, 2015). Following the Millennium Development Goals adopted in 1992, the Sustainable Development Goals from the UN were called to life in 2015, in order to make human development and living on earth more sustainable and better for both humans and the planet (United Nations, 2015). Furthermore, collective action is taken by several organizations and movements and is of utmost importance (Fritsche & Masson, 2021; Rees & Bamberg, 2014). Individual action can take any form and extend, some individuals reduce their impact on the environment by changes in diets, habits, and behavior (United Nations, 2018).

But by far not enough action is taken. Milner and Burgmann (2020) observed that “the science is no longer seriously in question, but nonetheless it is routinely ignored” (Milner & Burgmann, 2020: 1). So how can people be motivated to take climate action? According to research in social psychology, intrinsic motivation, together with strong biospheric values make an individual more prone to engage in pro-environmental behavior (Bouman & Steg, 2019; Hewstone et al., 2015). Values serve as motivational factors and are the beliefs that guide an individual's actions and attitudes (Hewstone et al., 2015). Collective action is motivated by “ingroup identification, social norms, group-based emotions, and collective efficacy” (Fritsche & Masson, 2021: 114).

### ***1.3 Narration and Fiction***

In our contemporary society, subjective appeals are gaining influence in shaping public discourse (Moezzi et al., 2017). According to neurophysiological research, storytelling has the potential to activate real world emotions and therefore has the power to motivate readers to take actual action upon what they read about (Barber, 2021; Goodbody & Johns-Putra, 2019). Hence, narration and fiction plays an important role in the discussions surrounding climate change and strategic

narratives could even help with making progress with climate action (Bushell et al. 2017). Literature can help meeting challenges, as it can interpret the past, describe and show the present and explore pathways of future possibilities (Barber, 2021). And the goal of sustainability communication is to on the one hand inform and raise awareness of a topic and on the other hand to actively motivate and encourage to partake in the action (Barber, 2021).

Christiana Figueres and Tom Rivett-Carnac, two of the primary organizers of the 2015 Paris Agreement, investigated the power of storytelling for climate action: *“We can be informed by art, literature, and history as much as by science. Meeting the challenge of climate change needs to become part of a new story of human striving and renewal. Right now, the predominant stories we are telling ourselves about the climate crisis are not very inspiring. But a new story can reinvigorate our efforts. When the story changes, everything changes.”* (Barber, 2021: 144).

Climate fiction is a newly emerging literary genre that explores future scenarios following climate change, with different foci, often looking at the socio ecological impacts (Barber, 2021). This literature could play a crucial role in the fight against climate change, as it brings different scenarios, which are to some extent, based on scientific research, closer to the public (Barber, 2021). Fiction can help to overcome climate anxiety (Panu, 2020) and transform towards living with climate change (Verlie, 2022), and ideally even motivate the reader to take action towards climate change mitigation (Barber, 2021). Unfortunately, one could assume that only pro-environmental-minded people with strong biospheric values would expose themselves to this type of literature (Schneider-Mayerson, 2018). Thereby, the people who already understand the importance of climate action would be encouraged to take even more action (Bouman & Steg, 2019). Studies also found that climate fiction readers are usually young (Lindgren Leavenworth & Manni, 2021; Schneider-Mayerson, 2018). An American study found that only 1.6% of their researched sample were very conservative and climate fiction readers (Schneider-Mayerson, 2018). Consequently, the reach of climate fiction has to be questioned, and the effectiveness against climate denialism is limited (Schneider-Mayerson, 2018).

### ***1.4 Aim & Research Question***

The aim of this research is to evaluate how climate fiction can contribute towards climate action, with a focus on understanding the exact role it can play and the reach and influence that it has. The research, with the research question: ***“How can climate fiction motivate people to take climate action?”*** aims to gain a better understanding of this literary genre.

To achieve this, an in depth literature review was conducted, covering the historical development of climate fiction and providing a description of what climate fiction is. More closely, this paper discusses the coverage of inequalities, the motifs of utopia and dystopia, the subgenres of tipping point narratives, indigenous literature, Afrofuturism and Solarpunk. Next to that, climate mitigation and adaptation as themes within climate fiction are explored. And lastly, the question is discussed in what way climate fiction can motivate climate action. Next to the secondary research, the perceptions of university students on the role of climate fiction for higher education are investigated using a qualitative survey. The responses of the survey and the findings of the literature research are taken to discuss the research question, with a focus on the topics of emotional responses to climate fiction, the role for motivation and learning and the role of climate fiction for higher education are elaborated on. Lastly, the limitations and further research recommendations are considered.

## **2. Literature review**

### ***2.1 History of Climate Fiction***

Fiction surrounding the topic of climate catastrophes tended to address one of the “three main tropes: the new ice age, the burning world and the drowned world” (Milner & Burgmann, 2020: 3). Especially the trope of floods has been extensively covered historically, with the earliest stories being ‘Noah’ from the Christian bible and the story of ‘Ūta-napišti’ from an ancient Mesopotamian belief. In both of these stories, a theogenic force caused enormous floods worldwide and the protagonists survived using an arch (Milner & Burgmann, 2020).

Early on and reaching well into the 21st century, in most fictional stories addressing climate disasters, the causes were either theogenic, xenogenic or geogenic, but never anthropogenic.



Theogenic means caused by a higher force connected to religious beliefs, so something enforced by a god or gods, xenogenic refers to catastrophes caused by extraterrestrial life such as aliens, geogenic entails the concept of naturally caused disasters such as earthquakes and volcanoes or even solar flares, and anthropogenic causes would be human-made catastrophes or climate change (Milner & Burgmann, 2020).

Some literature addresses the ideas of anthropogenic climate change, as for example ‘The Baltimore Gun-Club’ trilogy from 1865 revolved around the idea of intentionally inducing climate change by relocating the earth's axis with the goal of melting the ice caps, just to be able to access massive coal deposits that presumably lay underneath the poles (Milner & Burgmann, 2020). But here, the aim was to induce the melting of the ice caps, instead of the story being inspired by the melting ice caps due to climate change.

Other literature, like Kōbō Abe's novel 第四間氷期/Dai-Yon Kampyōki/Inter Ice Age 4 from 1959 addressed sea level rise and considered anthropogenic causes, mainly CO<sub>2</sub> emissions, as a potential cause for the increasing water levels. But in the novel, this possibility was quickly discarded as the ‘true cause’ of underwater volcanic eruptions was found. Abe was among the first to recognize the possibility of anthropogenic climate change as a cause for disaster (Milner & Burgmann, 2020).

Especially in the 20th century, the interest about new ice ages was much more prevalent than topics surrounding global warming. In the geological time frame, the Earth has been in the so-called Holocene for the past 11,700 years. The Holocene is at a relatively warm and stable interglacial state in the ongoing ice age of the Quaternary period (Jacobson et al., 2000). Therefore, the end of the Holocene and return of a cooling planet was a central theme to science fiction. The theme stemmed from climate science, however, the explanations of why the ice age returned are mostly imaginative and show little scientific accuracy (Milner & Burgmann, 2020).

The opposite trend, one of a warming planet, started in the 1970s, as scientific concerns started to rise and when a major scientific report in 1979 was published, predicting that the greenhouse effect and global CO<sub>2</sub> emission would result in increasing global temperatures (Milner &

Burgmann, 2020). The novels ‘Heat’ by Arthur Herzog from 1977 and ‘The Sea and Summer’ by George Turner from 1987 were one of the first novels addressing anthropogenic climate change as a central theme. ‘Heat’ revolved around mitigation efforts, whereas ‘The Sea and Summer’ conveyed adaptation attempts and climate communication (Barber, 2021; Milner & Burgmann, 2020).

## ***2.2 Climate Fiction***

Climate fiction is a subgenre of science fiction (Milner & Burgmann, 2020) and does not have a straightforward definition, it is mainly used as an umbrella term for literature, or sometimes movies, that deal with climate change. What differentiates this literature from other genres is that it addresses future scenarios following climate change and explores psychological and social issues on individual or collective levels and in relation to the planet (Goodbody & Johns-Putra, 2019). Climate fiction explores different pathways and aims to answer ‘what if?’ questions that often originated from emotions and worries of our contemporary society (Lindgren Leavenworth & Manni, 2021). Most of the time, the plot plays in the future, and sometimes, the story is partly founded on scientific and meteorological facts (Goodbody & Johns-Putra, 2019). Nonetheless, as Gibson and Whyte (2022) observe, climatological occurrences are often oversimplified, and as a technological system rarely investigated in depth (Gibson & Whyte, 2022) and the relationship to science can sometimes be fraught (Milner & Burgmann, 2020).

In the past years, climate fiction has grown rapidly as a genre and is particularly popular amongst young people (Lindgren Leavenworth & Manni, 2021; Schneider-Mayerson, 2018). The rapid growth of this genre has multiple reasons. Tuhus-Dubrow (2013) speculated that in the past “perhaps climate change had once seemed too large scale, or too abstract, for the minutely human landscape of fiction” (Tuhus-Dubrow, 2013, p.59). Moreover, the complexity of the science, together with denial and disinformation, as well as the anxiety and fears engendered by apocalyptic and dystopian future scenarios depicted in popular culture, have all contributed to a lack of public understanding of the topic (Barber, 2021). Nowadays, climate change has become a more urgent, publicly known and tangible problem over the course of the last few years. Therefore, the interest in climate change literature and demand for fictional narratives has grown (Barber, 2021; Tuhus-Dubrow, 2013).

Climate fiction can address all kinds of topics and global issues, such as: “rising sea levels, floods and hurricanes, rising temperatures and desertification, water scarcity, population migrations, species migration and extinctions, changing ocean currents and toxicity as well as climate-influenced pandemics.” (Barber, 2021: 148). Often climate change is the central theme of the literature, but in certain cases, it can be even more powerful as a background theme (Schneider-Mayerson, 2018).

Literature can be seen as a mechanism for human society to understand themselves, as it reflects the contemporary world (Milner & Burgmann, 2020). Climate fiction is a unique tool to reframe the narrative surrounding climate change, because it envisions sustainable pathways or how 'business as usual' scenarios might play out in the future (Barber, 2021). With that is with no means predictive, still, it can offer warnings and subliminal messages (Gibson & Whyte, 2022). By that, it can inspire public visions of sustainability and at the same time as raising awareness of the threats of climate change (Barber, 2021).

Some writers have a scientific background and use climate fiction as a way of putting their knowledge into a narrative. For others, their own eco anxiety can act as a driver for engaging in writing cli fi, as a way to process anxiety and indirectly call for change. According to climate fiction author James Bradley, fiction “gives us a language with which to talk about grief and loss, and of imagining what’s coming in human terms.” (Brady, 2017, para. 33). No matter the background or intention with it, most authors share that they translate the non-fiction reality of climate change into experiences and emotions (Tuhus-Dubrow, 2013). Moreover, climate fiction often reflects the anxieties and fears that also encompass nonfictional climate change discourse (Gibson & Whyte, 2022).

Non-fiction mainly presents facts and figures and is grounded in scientific evidence. This can be very persuasive to some people, but intimidating to others. Climate fiction, unlike non-fiction, can sometimes present the irrationality of human behavior very well, and can help trigger a self-reflection of the readers on their own behavior (Barber, 2021; Lindgren Leavenworth & Manni, 2021; Nikoleris et al., 2017; Schneider-Mayerson, 2018; Tüskés, 2019). Furthermore,

fiction can be a powerful tool in influencing people's beliefs (Bushell et al., 2015). Voices claim that summarizing IPCC reports, for instance, and making them publicly easily accessible would have a similar effect as climate fiction, as, arguably, only people that are interested in environmental issues already, would chose to expose themselves to climate fiction, and this would make climate fiction ineffective, as it is simply an addition to scientific reports that are preaching to the choir (Schneider-Mayerson, 2018).

### ***2.3 Inequalities***

Oftentimes, climate fiction depicts anthropogenically induced climate change as an issue that affects the whole world equally and simultaneously and was caused by humanity altogether (Gibson & Whyte, 2022). However, in reality, there are pre-existing vulnerabilities and climate change affects different regions of the world uniquely and with diverging intensities (Hummel, 2016; Niang et al., 2014). The disproportionate effects of climate change on the global South and indigenous communities becomes apparent when investigating how those areas are already coping with disasters and immediate effects of climate change (Gibson & Whyte, 2022).

Societal changes are often not addressed and, as Gibson and Whyte (2022) observed, apocalyptic scenarios tend to depict the end of the world in a manner that remains recognisable to privileged readers of the global North and without illustrating or going into depth on inequalities and historical circumstances of oppression or colonization (Gibson & Whyte, 2022). Next to that, climate fiction is often written through the lens of privileged white people, in many instances men, from the global North (Gaard, 2014). As a result, mainstream climate narratives fail to consider a story in which the ones that caused climate change do not endure the disaster intact or at all (Gibson & Whyte, 2022).

Despite that, climate fiction can be cautiously used as a tool to get a grasp of those injustices and technological challenges surrounding climate change across the globe (Gibson & Whyte, 2022). Those narratives have the potential to present the complex reality of historical influences, present occurrences and future visions that entail indigenous or feminist viewpoints and are important contributions to the field (Gibson & Whyte, 2022). Examples of such works are Margaret Atwood's (2003–2013) 'MaddAddam' trilogy as a feminist viewpoint and Ursula Le Guin's

(1976) ‘The Word for World Is Forest’ which considers colonial and racial elements of environmental injustice (Gibson & Whyte, 2022). To conclude, “the future can neither dwell in nor forget the past, no matter how much it might want to” (Gibson & Whyte, 2022: 25), and the importance of representation of different voices in climate fiction is of high importance.

## ***2.4 Utopia & Dystopia***

Climate fiction can take dystopian or utopian forms (Milner & Burgmann, 2020). Dystopian novels often depict the trope of an apocalypse, which can take either a tragic or comic form, and are often a mix of both motifs (Gibson & Whyte, 2022: 9). As Gibson and Whyte (2022) explain, tragic would be a situation where the “apocalypse is inevitable and redemption from human guilt or evil is to be found in sacrifice” and a novel with a comic motif would depict a story where “apocalypse is avoidable and redemption from human error is to be found through recognition” (Gibson & Whyte, 2022: 9). Dystopian novels can be pessimistic and come over as hopeless, nevertheless, the demand for dystopian novels is high (Barber, 2021).

Utopian novels can be inspiring to the reader (Schneider-Mayerson, 2018), but many times, the origin of the utopian society is unclear in the novels and the reader is left in the dark about how the transition took place (Barber, 2021). This can be seen as a weakness. Furthermore, the governance systems are often not clearly defined, with novels set in self-governing communities or with no explicitly mentioned structural system, even though the government is an important building block in storytelling and worldbuilding (Barber, 2021).

### ***2.4.1 Tipping Point Narratives***

Many climate fiction narratives try to tackle the threat of climate change through the presentation of tipping points, and with the characters struggling to survive, navigate, avoid or cope with the tipping points (Gibson & Whyte, 2022). The reader is taken into a thrilling situation where the future of the planet is balanced on the knife's edge, and the apocalypse awaiting is depicted to be resulting in the collapse of the environment or society, sometimes also both. The triggers for the tipping point are usually imaginative, as are the innovative solutions that allow for preventing the worst case scenario. Oftentimes, on the brink of disaster, the role of technology is set into focus and is either embraced as a solution or cast aside. Tipping point narratives, as realism and

specific depiction in the ‘Science in the Capital’ trilogy by Kim Stanley Robinson’s (2004–2007) exemplifies, are excellent at creating a sense of urgency and that the disaster is about to unfold (Gibson & Whyte, 2022).

#### ***2.4.2 Indigenous Literature & Afrofuturism***

Climate variabilities affect different parts of the world in various ways and to different degrees, but Africa is amongst the most vulnerable to the effects climate change (Hummel, 2016; Niang et al., 2014), with temperatures expected to rise even further (Engelbrecht et al., 2015; Niang et al., 2014). Afrofuturism is a subgenre of climate fiction written by Black authors and forms “an intersection of imagination, technology, the future and liberation” (Womack, 2013, p. 9). It usually is dystopian (Safaeyan, 2022) and the post-colonial writers have the unique power to “narrate a sense of ongoing crisis rather than an upcoming one” (Scott 2016: 77) as they already experienced abrupt changes in their environments and harmful experiences under colonialism (Gibson & Whyte, 2022). These narratives are identifiable to the readers as they are able to accurately represent the anxiety many people have regarding global warming (Gibson & Whyte, 2022).

The depiction of nature in mainstream climate fiction is often contrasted with technological advancements, and nature is rarely portrayed as the spiritual being that many indigenous communities believe in, and if it is displayed as such, the contrast to innovation and technology is drawn (Gibson & Whyte, 2022). Indigenous climate fiction offers an alternative view on nature and the environment, and can help foster a better appreciation for biodiversity and alongside that, cultural diversity (Gibson & Whyte, 2022). Next to an environmental crisis, they frequently address intersectional injustices and give a stage for female protagonists and embrace the empowerment of non-classical main characters (Gibson & Whyte, 2022).

‘The Broken Earth’ trilogy from 2015 - 2017, for example, addresses topics of colonialism, environmental violence, race, gender, stereotypes and prejudices from an Afrofuturist perspective (Gibson & Whyte, 2022). ‘The Parable of the Sower’ from 1993 picks a fictional religion as the central theme and through the story advocates for the importance of change and transformation, as well as adaptation to circumstances and the growth through it, but it

simultaneously addresses the difficulty and challenges that come with it (Gibson & Whyte, 2022). Hopkins' 'Midnight Robber' from 2000 provides an intriguing perspective for the interrelation of settler colonialism and the intruded indigenous communities and investigates an uncommon view through the curious eyes of a child that forms a relationship to the native community and opens the channel for communication (Gibson & Whyte, 2022).

### ***2.4.3 Solarpunk***

On the contrary, Solarpunk imagines a sustainable and utopian future, with a focus on solar energy (Cogbill-Seiders, 2018; Reina-Rozo, 2021). It explores the relationship between technology, nature and society (Reina-Rozo, 2021).

Kim Stanley Robison's 'New York 2140' and Megan Hunter's 'The End We Start From' both are examples of an optimistic take within climate fiction, where collective action against climate change is taken. Here, the role model function for the reader's behavior is quite present (Reina-Rozo, 2021).

## ***2.5 Mitigation & Adaptation / Lifeboat & Collective***

When it comes to dealing with climate change, there are two strategies: mitigation and adaptation. Mitigation entails the concept of attempting to reduce the emissions and greenhouse gasses, so it addresses the root of the problem, whereas adaptation means to reduce the impacts of climate change by increasing preparedness and reduction of vulnerabilities (Frey & Gasbarro, 2020). The narratives of climate fiction can have two different ways in which they presume the true face of human nature: egoism or altruism, which often take shape as the lifeboat or collective narrative. (Barber, 2021). Mitigation often takes the form of the lifeboat narrative, which portrays individuals struggling for survival, whereas adaptation often shows the collective community effort of increasing resilience and finding social purpose (Barber, 2021).

"Climate change is a fundamentally collective process" (Milner & Burgmann, 2020: 2). Yet, in our contemporary society, in the fields of economics, politics and even literature, the idea of collective action seems relatively absent (Milner & Burgmann, 2020). Currently, the majority of climate fiction novels have focused on mitigation, rather than adaptation and it often has social conflicts and violence as topics, and rarely features the journey towards increasing collective

resilience (Barber, 2021). As Barber (2021) puts it, “this literature is strong on cautionary scenarios, weak on solutions” (Barber, 2021: 149), this can make it appear unrealistic (Schneider-Mayerson, 2018).

## ***2.6 Can climate fiction motivate climate action?***

Our contemporary society is facing the catastrophic consequences of the slow-onset disaster of climate change that is unfolding broadly behind closed curtains (Barber, 2021; Schneider-Mayerson, 2018). There is a need for the careful considerations and explorations of potential pathways in which climate change can take place in climate fiction, that make this complex matter accessible to less-informed readers (Milner & Burgmann, 2020). The stories can stimulate reflection and thought experiments (Milner, 2009). Additionally, next to informing and making the readers aware of climate change, climate fiction aims to encourage the reader to engage with a more sustainable lifestyle (Barber, 2021).

### ***2.6.1 Emotions***

The research of Schneider-Mayerson (2018) revealed that climate fiction was eye opening to many readers, and that it has the potential to help getting a clearer understanding of potential yet realistic future scenarios, this aligns with psychologists evaluations that “vivid imagery leads to more narrative engagement and recall” (Schneider-Mayerson, 2018: 483). Furthermore, “through identification with the protagonists in literary fiction, climate change moves from being distant and abstract to close and personal.” (Nikoleris et al., 2017: 317; Schneider-Mayerson, 2018; Tüskés, 2019). When the literature addresses the motif of a comic apocalyptic scenario, the reader is made aware of the urgency of the matter and is thereby motivated to take action, and the power of this motif is widely recognised (Gibson & Whyte, 2022). This means that framing environmental issues through the perspective of apocalypse can be very motivating and inspiring (Gibson & Whyte, 2022).

Climate fiction readers often experience strong negative emotions of hopelessness and sadness, which, on the one hand shows the power of climate fiction in reaching readers, but, on the other hand, can negatively influence the effectiveness in persuasion (Schneider-Mayerson, 2018). Climate fiction novels are often described as “entertaining [... but] ‘not very inspiring’” (Barber,



2021: 153) and stuck with dwelling on hopelessness (Schneider-Mayerson, 2018). It risks reinforcing the pessimistic and hopeless attitude of the readers (Barber, 2021; Schneider-Mayerson, 2018) and trigger emotional reactions of anxiety and feeling unsettled about the state of the current world (Gibson & Whyte, 2022; Schneider-Mayerson, 2018). Emotions such as anger can be a great catalyst for action, but the emotions frequently triggered by dystopian climate fiction can trigger the desire to entirely avoid the matter, which has a demobilizing effect (Schneider-Mayerson, 2018). Positive framing and utopian climate fiction is relatively uncommon, even though readers can be inspired and encouraged by the messages about resilience and preparedness (Schneider-Mayerson, 2018).

Despite having the potential power to raise awareness about climate change, climate fiction rarely offers solutions (Gibson & Whyte, 2022) and the focus on collectively adapted communities that have built resilience by following a realistic future pathway is relatively uncommon (Barber, 2021). Additionally, Barber (2021) rightfully points out that both scientists and climate activists are currently failing to convince government agencies as well as individuals in society to take climate change seriously and that action is necessary and urgent, so then the power of climate fiction as a tool to motivate people to take climate action should not be overestimated (Barber, 2021). Nonetheless, climate fiction can reach responses and emotions of readers that institutional science could not reach, therefore, with caution, it has the potential to be used as a tool in education (Barber, 2021; Lindgren Leavenworth & Manni, 2021).

### ***2.6.2 Education***

Climate fiction is very popular amongst young people, and it has the power to educate about climate change and related discourse (Lindgren Leavenworth & Manni, 2021). Research about the use of speculative fiction in education has brought fascinating insights. The emotional responses and thought processes that can be triggered by climate fiction can create a way for students to explore the topic of climate change in a safe space. And the identification with the protagonists can lead to a new pathway for young people to channel and discover their own emotions regarding climate change and the fictional stories often overlap with preexisting worries, but also hopes about the future.

Critical and informed reading can foster understanding and recognising the interconnectedness and complexity of the matter, as well as the existence of inequalities and the nature of the relationship between humans and the environment (Lindgren Leavenworth & Manni, 2021; Schneider-Mayerson, 2018). It can create “a heightened consciousness of environmental injustice—the inequitable distribution of risk, vulnerability, and exposure based on race, class, gender, nationality, and other factors” (Schneider-Mayerson, 2018: 486). Climate fiction has the power to bridge both the temporal and social distance that readers often experience regarding topics of climate change. The social distance could be the distance between privileged readers and victims of climate injustice, climate fiction can help overcome it by creating awareness and empathy (Schneider-Mayerson, 2018). Furthermore, the skills of critical thinking, problem solving and collective agency are improved (Lindgren Leavenworth & Manni, 2021).

Lindgren Leavenworth and Manni (2021) identified that the young students already showed an intrinsic interest and desire about sustainable practices. The critical reflection on our contemporary society through the lens of climate fiction can spark a discussion on sustainability. Moreover, the potential of fiction to unveil the lack of collaboration for climate adaptation and mitigation and its consequences is tremendous, as it can function as a wake-up call. The reflection that is encouraged by engaging with the materials can foster action and create a feeling of responsibility (Lindgren Leavenworth & Manni, 2021).

But can climate fiction actually have an effect on people's perception of climate change and make a significant difference that can be seen in their behavior? Because climate fiction is relatively new, this question is a bit understudied. So far, studies were not able to detect a measurable shift in public perception towards climate change, or behavioral changes caused by exposure to climate fiction (Schneider-Mayerson, 2018). So far, it is clear that climate fiction is not a cure for climate denialism, but it can cause emotional responses of anxiety, sadness or the feeling of hopelessness, but also hope and optimism (Schneider-Mayerson, 2018).

On the basis of this literature review and the current state of art surrounding climate fiction, the aim of this research is to evaluate how climate fiction can contribute towards climate action, with

a focus on understanding how it can motivate people to take climate action. The research has the research question: “*How can climate fiction motivate people to take climate action?*”. The issue arises that potentially, only pro-environmentally minded people would read climate fiction, and with that, its effect as a tool decreases drastically. With the use of climate fiction in education, the reach would be broadened and it could aid as a tool for teaching about climate change and start a discussion. Furthermore, it could motivate action through inspiration and wake-up calls.

### **3. Methodology**

#### ***3.1 Research Type***

Secondary research in the form of desk research has been conducted, for that, an in-depth literature review was composed. The aim of the desk research was to gain a better understanding of the literary genre of climate fiction and to thoroughly investigate the role of it in the field of literature and for climate change.

To complement this research, the desk research was accompanied by a small scale qualitative survey. The goal of the survey was to evaluate the perceptions of young European students towards climate fiction and its role in climate action. Through the direct involvement of young people, their personal perceptions can be grasped and the role of climate fiction for climate action, especially in the context of higher education, can be better understood. The qualitative approach was chosen as the deeper reasoning behind the perceptions of students can come to light.

#### ***3.2 Data Gathering & Procedures***

The secondary research was carried out on SmartCat and GoogleScholar, with search terms such as ‘climate fiction’, ‘cli-fi’ and ‘influence of climate fiction’. Additional resources were

suggested and provided by the supervisor of this project. Background information was found and accessed via Google, especially making use of United Nation databases.

The survey was developed based on the findings of the literature review and background research and the questions were phrased open-ended, aiming at elaborate answers. The survey can be found in the Appendix (Appendix 1: Survey Template). The survey was structured in three parts, the first part functioned as an introduction, the terms and conditions of the participation were clearly explained, followed by a confirmation question about the consent. In the second part, demographic questions about the age, gender, country of residence, nationality, university affiliation were asked, followed by the question whether the participants had heard of climate fiction before. The third part of the survey consisted of five open ended questions such as: “In what way can climate fiction trigger emotional responses about climate change? Please elaborate.”. The researcher was aware that a potential personal bias towards the topic could influence the phrasing of questions and nudge towards specific answers. Therefore, the questions were framed objectively to avoid such effects of bias (Grimm, 2010). The survey was created in English. The survey template can be found in the Appendix (Appendix 1: Survey Template).

The survey was sent out to selected groups of participants that fulfilled the following criteria: being a Central European student or former student between the ages 18 and 30. Young people were selected because they are the group that is most likely to engage with climate fiction (Lindgren Leavenworth & Manni, 2021; Schneider-Mayerson, 2018). Additionally, the perceptions of climate fiction for higher education were evaluated, so the opinions of students are of high value. WhatsApp was chosen as a medium to distribute the survey to personal contacts of the researcher that fulfilled the criteria. The group comprised a sample of different backgrounds, however, all the participants were personal contacts from various occasions, so many participated in Erasmus projects about sustainability, whilst others work towards a university degree related to, or in connection with sustainability. The sample therefore consisted of relatively pro-environmentally minded students.

A total of 16 survey responses were recorded. Most (12) of the participants identified as female and were between 18 and 29 years old (Figure 1) and came from Central European countries (Figure 2). Only four participants have heard of climate fiction before, and four were not sure

whether they had heard of it, but even the people who have heard of climate fiction have not read climate fiction themselves and were only familiar with the concept.

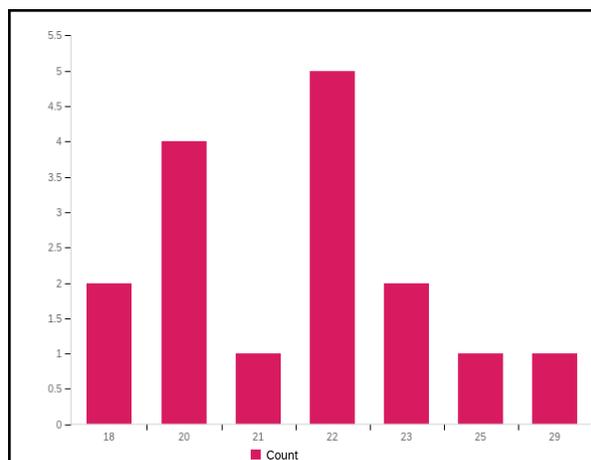


Figure 1:  
Age distribution of the participants

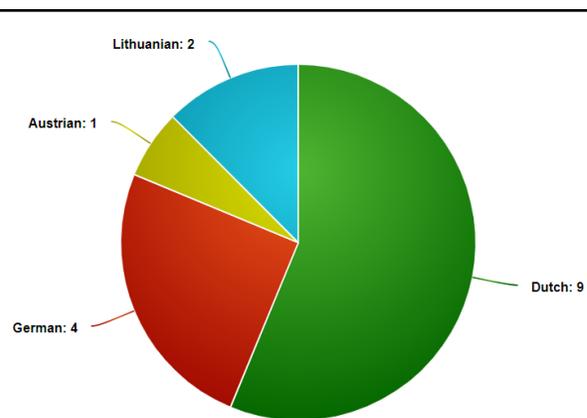


Figure 2:  
Nationalities of the participants

### 3.3 Data analysis

The survey results were analyzed qualitatively and the answers to the questions were taken as a basis to answer the research question of this research. The questions sought to provide answers for the research question, and different dimensions of climate fiction were investigated. The first three questions asked whether and how climate fiction could trigger emotional responses, motivate climate action and foster understanding of climate change. With that, the role of climate fiction was researched. The last two questions explored climate fiction in higher education. This aimed to examine the option of teaching about climate fiction in higher education to expand the reach.

The demographic data was statistically analyzed using descriptive statistics. The aim of the small-scale survey was to investigate the perceptions of the cross section of the specified target group, and did not intend to be statistically significant or representative.

### ***3.4 Ethical considerations***

The secondary research was free of ethical concerns. For the primary research, ethical considerations were made. The survey was selectively sent out to the target group, which consisted of participants above the age of 18. The aim and nature of the research was communicated in advance and the terms and conditions about confidentiality and voluntary participation were clearly stated in the beginning (see Appendix 1). The participants were asked to accept the conditions of the research and had to give consent. Of utmost importance, the gathered data was handled respectfully and anonymity at any point of the research was granted. For further information about the rights as a participant, they were given the opportunity to contact the researcher or the Ethics Committee of Campus Fryslan. Ethical concerns are kept to a minimum, since the survey questions did not cover sensitive topics, apart from the basic sociodemographic data.

## **4. Discussion**

The aim of this research is to evaluate how climate fiction can motivate climate action, with a focus on understanding the exact role it plays and the reach and influence that it has. The research question: “*How can climate fiction motivate people to take climate action?*” aids in gaining a better understanding of this literary genre. Climate fiction as a literary subgenre addresses urgent threats and future scenarios following climate change (Milner & Burgmann, 2020). Fiction can foster learning about climate change (Gibson & Whyte, 2022; Lindgren Leavenworth & Manni, 2021; Milner & Burgmann, 2020; Schneider-Mayerson, 2018) and motivate action (Barber, 2021; Gibson & Whyte, 2022; Lindgren Leavenworth & Manni, 2021; Schneider-Mayerson, 2018). Unfortunately, one could assume that only pro-environmental-minded people would expose themselves to this type of literature (Bouman & Steg, 2019; Schneider-Mayerson, 2018). With this in mind, the role of climate fiction as a potentially effective tool in education came forward in the in-depth literature research. Next to the secondary research, a small scale qualitative research survey with open-ended questions

amongst the central European student population was conducted to investigate the perceptions of university students on the role of climate fiction for higher education and as a tool for learning, understanding and motivating climate action.

#### ***4.1 Evaluation of the Survey***

The sample of survey participants consisted of 16 participants, of which most (12) identified as female and were between 18 and 29 years old, coming from Austria, Germany, the Netherlands and Lithuania, with the majority (9) being from the Netherlands. Only four participants have heard of climate fiction before, and four were not sure whether they had heard of it. Even the people who have heard of it before have not read climate fiction themselves and are only familiar with the concept. This was surprising, as the sample consists of many people that are affiliated with sustainability through one or more aspects of their lives, namely through their studies or hobbies. Therefore even in an presumably above-average pro-environmentally minded sample, the familiarity with climate fiction is minimal. The results of the survey align well with previous research and the literature review, nevertheless, they also brought new insights in regards to the research question of this paper.

##### ***4.1.1 “In what way can climate fiction trigger emotional responses about climate change?”***

The literature research brought to light that climate fiction can activate strong emotional responses of the readers (Barber, 2021; Gibson & Whyte, 2022; Lindgren Leavenworth & Manni, 2021; Nikoleris et al., 2017; Schneider-Mayerson, 2018; Tuskés, 2019). Among the emotions discussed by the literature are negative and positive emotions, each of which have different effects on the reader (Schneider-Mayerson, 2018).

Aligning with the literature research, all of the participants agreed that climate fiction can trigger emotional responses. This is demonstrated by most respondents. Many also differentiated between positive and negative emotions. Being fearful and scared about the future, as consequences of reading climate fiction were named by multiple participants, many also brought

it into connection with dystopian fiction. They concluded that dystopian fiction can bring the realization “that we really are on a path that needs correcting”, “that that dystopia is one we’re heading to straight away” and that climate fiction could “trigger fear and anxiety since it displays a dystopian but not unlikely future”. One respondent elaborated that they believe dystopian fiction would only trigger extreme responses such as fear when the pathway explored in the fiction would display devastating consequences such as death for the characters in the novel. The potential power of climate fiction, to “elicit emotions that would make one more woke and active”, as one respondent puts it, was also recognised by multiple participants.

The utopian subgenre was also considered by a few participants. It was described to be “dreaming instead of taking action” on the one hand, but it was also viewed in the light of “addressing the most important point that everyone has to do something right now”. The motivational power of utopian fiction was widely recognised among the participants that addressed utopian fiction. One person directly named the solar punk movement and called out the personal experience they had: “[it] always gives me new motivation to work for the amazing future that solar punk aspires”.

According to the respondents, the different perspective and reminding the readers of the real world that is presented helps with activating an emotional response, and can also “remind[...] people of their climate anxiety”. Further, it “can make you think about tomorrow” and act “as a wake up call or mirror”. But next to that, one participant pointed out that it can also foster learning about climate change.

One participant called out the manipulative nature of fiction that “can generate and hope, fear, hate and action” and draws parallels to the use of propaganda in wars or crises: “people paint utopian or dystopian pictures to control/influence people's action, to do what they deem good and noble”.

In light of the research question, it becomes clear that emotional responses show a high level of engagement with the literature, and the strength and nature of the emotional response can, as rightfully observed by the participants as well as literature, take different forms and can be



related to different subgenres of climate fiction. However, interestingly enough, all participants described the potential of positive but also negative emotions to act as a wake-up call, and have a motivating and inspiring function. They pointed out the possibility of fearful reactions after having read climate fiction, yet, they did not consider hopelessness as an emotional response. In literature, hopelessness was discussed as a potentially counteractive emotion that could decrease the effectiveness of persuasion towards climate action (Barber, 2021; Schneider-Mayerson, 2018).

#### ***4.1.2. “Do you think climate fiction could motivate to take climate action?”***

The literature review strongly suggested that climate fiction has the potential to motivate climate action (Barber, 2021; Gibson & Whyte, 2022; Lindgren Leavenworth & Manni, 2021; Schneider-Mayerson, 2018). However, the type of literature, so a dystopian or utopian climate fiction novel can have different effects on the reader when it comes to motivating climate action (Schneider-Mayerson, 2018). Some research also suggested that under certain circumstances, climate fiction can have demobilizing effects (Schneider-Mayerson, 2018).

Most respondents agreed that climate fiction can motivate climate action, they named multiple reasons for this. For one, it “evokes empathy” and gives “gives concrete future scenarios”, which is helpful, according to one participant: “having the explanation of how extreme or bad things are, people can be motivated to want change”. Additionally, the difference of dystopian and utopian fiction was investigated: “fear is a really good motivator to take action. Also when reading a utopian book this can motivate to work to reach that utopia.”. Furthermore, it can “lead to more creative thinking on how we would like to design our future world.”. Overall, the knowledge transfer through the novel is seen as benefit for many participants, because knowing more about climate change can lead to more action. The potential role model function of climate fiction of climate fiction should also not be underestimated, claims one participant: “maybe a certain character is very convincing, wanting the reader to become like the character and take action in that way.”. Presenting future pathways and activation emotional responses “is a very potent way to push people in a specific direction and that's why advertising and propaganda works with it. With stories, pictures and powerful anecdotes.”.

The power of fiction is realized by the participants, one of them explained “because a story is more emotional and relatable, it might even motivate action more than reading dry scientific paper.”. Another respondent pointed out a similar point, that climate fiction could reach a more diverse target group than scientific articles could attract. One person argued that the subgenre should be renamed to be called climate literature: “I think we need to get rid of the 'fiction', because that indicated that it's not real.”

Some participants had more nuanced responses, explaining how the expected audience for climate fiction is likely already pro-environmentally minded and likely already motivated to take climate action. Another person pointed out that the book itself should provide inspiration for climate action in order to be an effective motivation. Furthermore, one person described that it depends on whether the people “think that they can have an influence”. One person explained that it would surely increase the awareness on the importance of change. The motivational role of climate fiction was also connected back to the nature of the novel: “if the fiction is more positive it could maybe give me hope and motivation”.

Only two participants defended the opinion that climate fiction could not motivate climate action. The main reason for that would be the demotivating role of dystopian fiction: “not if there is just a reminder or it is an apocalyptic book. I think that would only inspire apathy”, “I’m not sure because I get demotivated when I read stories with a negative outlook on the world and future.”.

The responses align very well with the findings of the literature, and with the research question in mind: “*How can climate fiction motivate people to take climate action?*”, it becomes clear from the research and responses that climate fiction can evoke empathy and raise awareness, and that the emotional responses have the power to act as encouragements and inspirations for climate action. Especially if the climate fiction is framed around an inspiring message, both literature and survey results show that this can be especially motivating.

#### ***4.1.3 “Do you think climate fiction could help to learn more about climate change?”***

The literature review showed that climate fiction can foster a deeper understanding of climate change, environmental injustice and the interconnectedness of the complex matter. (Gibson & Whyte, 2022; Lindgren Leavenworth & Manni, 2021; Milner & Burgmann, 2020; Schneider-Mayerson, 2018). The reach of climate fiction is rather limited, as mainly young and more pro-environmentally minded people expose themselves to climate change literature (Lindgren Leavenworth & Manni, 2021; Schneider-Mayerson, 2018).

Many participants agreed that climate fiction could help educate about climate change, for that, they mentioned multiple reasons. It can help showing “many facets of climate change and how it manifests”, and thereby gives examples of potential pathways. The point is raised that “teaching people about climate change shouldn’t be the main goal of climate fiction”, but that it still helps in educating people through stirring narration.

One person explained that it helps through “making difficult and (...) boring statistical information fun to consume through fiction”. And another respondent elaborated that “especially for children, who don't care about statistics and data, it would be a great format to introduce them to the situation”. The additional benefits of reaching people that are less educated about climate change was pointed out by two people. They saw the potential that “perhaps climate fiction might help to tackle this barrier”. And that “if more people know about climate action and it gets more ingrained into pop-culture the conservative stand on it might decrease”.

Six participants explained the importance of the context and backgrounds of the readers in evaluating whether climate fiction can help to learn more about climate change. Some said that the level of preexisting awareness about climate change related topics would define whether it could provide some new realizations or a scientific basis, but that could potentially help to “shows how things are connected regarding climate and how this can impact people”, “it might teach a lot about societal consequences and how society behaves and reacts towards climate change”. A respondent reflects that that knowledge might be as important as the scientific basis behind climate change. Three participants seemingly disagreed on that and doubted the educational value of climate fiction, as it is not necessarily based on scientific facts: “I wouldn’t

trust it to be a good scientific book”.

Lastly, one participant reported that climate change would be too complex to learn about from fiction, and elaborated that “fiction will not broaden but deepen our view. It just carves our beliefs much deeper into our head”.

For the research question, the following implications arise. Surely, the literature review and many survey respondents agreed that climate fiction can foster understanding and raise awareness, and it even has the potential to reach people who would not otherwise educate themselves about climate change. However, climate fiction is a relatively unknown literary genre, and even from the sample group of this research, none of the participants were familiar with climate fiction work. And that is despite the fact that the participants are affiliated with sustainability in one way or another.

#### ***4.1.4. “Should climate fiction be covered in higher education?”***

One way to extend the reach of climate fiction could be to teach about it in higher education. Previous research investigated the advantages and disadvantages of primary education (Lindgren Leavenworth & Manni, 2021). It would create a safe space for students to explore the topic of climate change in an engaging and inspiring way. Moreover, the spatial and temporal distance towards the intangible future pathways of climate change are drastically reduced. Overall, climate fiction in education could spark discussions, encourage climate action and educate about inequalities and consequences of climate change (Lindgren Leavenworth & Manni, 2021).

Six participants said that climate fiction should be covered in higher education to various extents. The reasons for that differ between the participants, one explained that it would be “great discussion material” and two people pointed out how “most subjects should be linked to climate change to some extent” in order to “make people aware of the problems we are facing and the importance of acting upon them”. Other respondents mentioned how more discourse around climate change in general would be beneficial, and that it would therefore be covered in higher education. Someone else explored the thought of replacing outdated literature covered in highschool with climate fiction, as it “could be a much more relevant type of literature to cover

because it actually relates to students current lives and provides a basis to imagine and creatively think about politics, economics and societal structures”.

It was brought to attention that covering climate fiction in higher education should certainly come with the disclaimer that it is fictional and that not everything should be trusted. Furthermore, it was pointed out how the type of educational program would strongly influence whether climate fiction should be considered as part of the curriculum, if at all: “in programmes about climate or about literature it could be a nice extra but i dont think its a necessary topic to cover”. Others explored how it could potentially be “included in a course on science communication, which I think definitely should be included in education”, whilst others are of the opinion that “nonfiction is enough”. Many participants share the latter opinion, and explain that “higher education should not degrade to a tabloid press level, but rather look dispassionately at the facts and use a discourse of different opinions to its advantage”. It is interesting that many participants reported to believe in the importance of climate change science to be covered in higher education in one way or the other: “climate problems either way should be taught in schools, so I don't think it's necessary to mix literature and science in school”.

Lastly, two participants shared that reading climate fiction should be strictly voluntary and kept in the freetime, so that discouragement through education styles would be avoided: “it will ruin the book for them”.

Against the positive insights of teaching about climate fiction in education, the respondents were rather critical towards fully integrating climate fiction into higher education. Even though the reach could be widened, the setting of higher education for teaching climate fiction needs to be examined further. Although integrating fiction into university settings was seen rather critically, many participants acknowledged the importance of teaching about climate change, with a focus on the scientific basis.

***4.1.5. “Would you be interested in learning about climate fiction throughout your higher education?”***

Eleven participants reported that they would be interested or potentially interested in learning about climate fiction through their higher education. The reasons for that varied, but many described an intrinsic interest and the acknowledgment of the importance of climate change to be part of why they would like to learn more about it: “it is interesting and we can use this kind of knowledge”, “this specialized genre could merge an interesting hobby with actual work and research” and “I think I would be more engaged with the material”. They expressed the interest to learn about it in a small extra course. Some people described specific interest in subtopics regarding climate fiction, for example: “I would be interested in how this could apply in manipulating societies and ethics around that”.

Many expressed that they would like it as a research project but not as a whole course, or that they would prefer engaging with it outside of the university: “I'd like to watch a documentary or read a book or article but not much more”. Next to that, the issue was raised to not “push them into seeing the world ‘the right way’”. So according to this participant, if climate fiction would be covered in higher education at all, it should be done cautiously. The use of it was questioned again by participants, as it is not based on scientific facts. Again, the wish for courses related to climate change was brought up: “I'd like to learn about [the] scientific side”.

Despite being critical towards climate fiction in the context of higher education, many participants expressed the intrinsic interest sparked for climate fiction, and although universities might not be the ideal setting for teaching courses about climate fiction, research projects investigating climate fiction were considered. In light of the research question, one could extrapolate from the responses that once a basis of knowledge for climate fiction is layed, intrinsic motivation can lead to an individual voluntarily engaging with climate fiction afterwards. So maybe teaching about climate fiction is not even necessary for people with strong biospheric values. Once they are aware of the existence of climate fiction, they might be inspired enough to engage with it deeply.

#### ***4.2 Limitations***

The research has some limitations. The small-scale qualitative research that complemented the desk research was carried out in a limited timeframe and the nature of the specific target group both led to the fact that the response rate and sample size was rather low.

Despite being presumably pro-environmental, none of the participants were familiar with specific works of climate fiction, and none had previously read climate fiction. The answers of students familiar with climate fiction could differ from those answers given in this survey, however, most responses aligned well with previous research addressed in the literature review, so the effect might be limited.

Lastly, there is a possibility that the respondents did not truly reflect their own opinions and perceptions in their answers, but that they consciously or unconsciously phrase their answers accordingly to what the researcher might want to hear. The so-called ‘social desirability bias’ can be reduced by framing impartial questions or by employing specialized techniques (Grimm, 2010). When evaluating the responses, the phrasing of question 1 was discovered to not be fully objective: “In what way can climate fiction trigger emotional responses about climate change?”. The phrasing ‘in what way’ suggests that climate fiction always triggers emotional responses, and the respondent might be nudged towards evaluating the way it triggers responses, rather than answering for themselves whether they believe that climate fiction would activate emotional responses in the first place. It is not possible to know whether this had an effect on the responses.

#### ***4.3 Further research recommendations***

Further research on the role of climate fiction in the education and mobilization for climate action is urgently needed (Schneider-Mayerson, 2018). Further research could follow up on the survey about the perceptions of university students. For one, the survey could be repeated on a larger scale with a less specific target group and over a longer timespan. With that, statistically significant results of a representative sample could be achieved.

Moreover, the integration of climate fiction into teaching concepts of social and humanitarian studies, as well as literature and media sciences could be researched, and use of pedagogical frameworks could be investigated. Finally, a learning material collection could be developed, with the aim of making the integration of climate fiction into higher education accessible.

Next to that, the perceptions of younger students or teachers could be examined, in order to evaluate whether climate fiction could be suitable for lower education, namely primary or secondary schools. It is recommended to include a larger sample size, and the research could be conducted qualitatively in the form of semi structured in-depth interviews with teachers, or quantitatively, in the form of surveys for a wide target group.

## 5. Conclusion

This research investigated the role of climate fiction by doing secondary research and by conducting a complementary small scale survey among university students. The research aimed to answer “*How can climate fiction motivate people to take climate action?*”.

Climate fiction has the power to activate positive and negative emotional responses, which can act as a wake-up call and have a motivating and inspiring function. Furthermore, fear and hopelessness, as described by the literature and the survey participants, can either catalyze the encouragement for action, or have demobilizing effects (Barber, 2021; Schneider-Mayerson, 2018). Climate fiction can evoke empathy and raise awareness on the importance of climate action. It can foster the understanding of the complexity and interconnectedness of climate change and related topics, such as inequalities and climate injustice. Unfortunately, climate fiction is a relatively unknown literary genre, and even from the sample group of this research, none of the participants were familiar with climate fiction work, despite the fact that the participants were affiliated with sustainability. Climate fiction in educational settings could have some great benefits (Lindgren Leavenworth & Manni, 2021), yet, the scale and the form it could take requires further research. Although the survey respondents were somewhat critical towards the teaching of fiction rather than facts in a university setting, they showed interest in learning more about climate fiction.



To conclude, climate fiction can motivate climate action by educating about climate change and encouraging a call to action by activating emotional responses of the readers. It can also discourage action when it triggers feelings of hopelessness and anxiety without offering inspiration for change. In educational settings, climate fiction could reach a wider audience, but the application of climate fiction in higher education requires further research and careful consideration.

Climate fiction has the potential to change the discourse about climate change, and to motivate climate action, and “*when the story changes, everything changes.*” (Barber, 2021: 144).

## 6. References

- Barber, J. (2021). The Challenge of Imagining Sustainable Futures: Climate Fiction in Sustainability Communication. *In The Sustainability Communication Reader* (pp. 143-160). Springer VS, Wiesbaden.
- Bouman, T., & Steg, L. (2019). Motivating society-wide pro-environmental change. *One Earth*, 1(1), 27-30.
- Brady A. (2017). How will climate change affect your grandchildren? *Chicago review of books*, October 24. Retrieved 23 Mai 2022 from:  
<https://chireviewofbooks.com/2017/10/24/burning-worlds-james-bradley-clade-interview/>
- Bushell, S., Colley, T., & Workman, M. (2015). A unified narrative for climate change. *Nature Climate Change*, 5(11), 971-973.
- Cogbill-Seiders, E. (2018). Solarpunk: Ecological and Fantastical Stories in a Sustainable World. *World Literature Today*, 92(5), 70-71.
- Engelbrecht, F., Adegoke, J., Bopape, M. J., Naidoo, M., Garland, R., Thatcher, M., ... & Gatebe, C. (2015). Projections of rapidly rising surface temperatures over Africa under low mitigation. *Environmental Research Letters*, 10(8), 085004.
- Frey, M., Gasbarro F. (2020). Adaptation and Mitigation Synergies and Trade-Offs. In: Leal Filho W., Azul A.M., Brandli L., Özuyar P.G., Wall T. (eds.) *Climate Action. Encyclopedia of the UN Sustainable Development Goals*. Springer, Cham.  
<https://rug.on.worldcat.org/oclc/1125947846>
- Fritsche, I., & Masson, T. (2021). Collective climate action: When do people turn into collective environmental agents?. *Current Opinion in Psychology*, 42, 114-119.

- Gaard, G. (2014). What's the story? Competing narratives of climate change and climate justice. *In Forum for World Literature Studies* (Vol. 6, No. 2, pp. 272-292). Wuhan Guoyang Union Culture & Education Company.
- Gibson, J. D., & Whyte, K. P. (2022). Science Fiction Futures and (Re) visions of the Anthropocene. *The Oxford Handbook of Philosophy of Technology*, 473.
- Glass, R. (May 31, 2013). "Global Warning: The Rise of 'Cli-fi'" retrieved March 3, 2022
- Goodbody, A. & Johns-Putra, A. (2019). *Cli-fi : a companion* / edited by Axel Goodbody and Adeline Johns-Putra. (Goodbody & A. Johns-Putra, Eds.). Peter Lang.
- Grimm, P. (2010). Social desirability bias. In J. N. Sheth & N. K. Malhotra (Eds.), *Wiley International Encyclopedia of Marketing: John Wiley & Sons Ltd.*
- Hewstone, M., Stroebe, W., & Jonas, K (Eds.). (2015). *An Introduction to Social Psychology* (6th ed.). Chichester: John Wiley & Sons
- Hummel, D. (2016). Climate change, land degradation and migration in Mali and Senegal—some policy implications. *Migration and Development*, 5(2), 211-233.
- Jacobson, M., Charlson, R. J., Rodhe, H., & Orians, G. H. (2000). *Earth System Science: from biogeochemical cycles to global changes.* (Vol. [2nd ed.]). San Diego, Calif: Academic Press.
- Lindgren Leavenworth, M., & Manni, A. (2021). Climate fiction and young learners' thoughts—a dialogue between literature and education. *Environmental Education Research*, 27(5), 727-742.
- Masson-Delmotte, V., Zhai, P., Pirani, A., Connors, S.L., Péan, C., Berger, S., Caud, N., Chen, Y., Goldfarb, L., Gomis, M.I., Huang, M., Leitzell, K., Lonnoy, E., Matthews, J.B.R., Maycock, T.K., Waterfield, T., Yelekçi, O., Yu, R., and Zhou, B. (eds.). (2021). IPCC: Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 3–32, doi:10.1017/9781009157896.001.

- Milner, A., & Burgmann, J. R. (2020). Science fiction and climate change: A sociological approach (Vol. 63). *Liverpool University Press*.
- Milner, A. (2009). Changing the climate: The politics of dystopia. *Continuum*, 23(6), 827-838.
- Niang, I., Ruppel, O.C., Abdrabo, M.A., Essel, A., Lennard, C., Padgham, J., Urquhart, P., 2014: Africa. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. *Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA*, 1199-1265.
- Nikoleris, A., Stripple, J., & Tenngart, P. (2017). Narrating climate futures: shared socioeconomic pathways and literary fiction. *Climatic Change*, 143(3), 307-319.
- Rees, J. H., & Bamberg, S. (2014). Climate protection needs societal change: Determinants of intention to participate in collective climate action. *European Journal of Social Psychology*, 44(5), 466-473.
- Reina-Rozo, J. D. (2021). Art, Energy and Technology: the Solarpunk Movement. *International Journal of Engineering, Social Justice, and Peace*, 8(1), 55-68.
- Safaeyan, S. (2022). Global, decolonial, antiracist, polychromatic: Literary Afrofuturism in the Twenty-First Century. *Science Fiction Film and Television*, 15(1), 93-100.
- Schneider-Mayerson, M. (2018). The influence of climate fiction: an empirical survey of readers. *Environmental Humanities*, 10(2), 473-500.
- Scott, C. (2016). (Indigenous) Place and Time as Formal Strategy. *Extrapolation*, 57(1-2), 73-94.
- Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.). (2013). IPCC. Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the

Intergovernmental Panel on Climate Change. *Cambridge University Press*, Cambridge, United Kingdom and New York, NY, USA, 1535

Tuhus-Dubrow, R. (2013). Cli-fi: Birth of a genre. *Dissent*, 60(3), 58-61.

Tüskés, G. (2019). Eco-Themes and Climate Change in Literature. In *International Climate Protection* (pp. 301-311). Springer, Cham.

Panu, P. (2020). Anxiety and the ecological crisis: An analysis of eco-anxiety and climate anxiety. *Sustainability*, 12(19), 7836.

United Nations (2018). Act Now. *United Nations Climate Action*. Retrieved June 03, 2022 from <https://www.un.org/en/actnow>

United Nations (2015). The 2030 Agenda for Sustainable Development. *Department of Economic and Social Affairs: Sustainable Development*

UNFCCC. (2015). Adoption of the Paris Agreement, 21st Conference of the Parties, *Paris: United Nations*.

Verlie, B. (2022). Learning to live with climate change: from anxiety to transformation (p. 140). *Taylor & Francis*.

## 7. Appendix

### 7.1 Appendix 1: Survey Template

Capstone 2022

Start of Block: Default Question Block



**Introduction** Thank you for taking the time to fill in my survey!

Your answers are greatly appreciated and will be used for my capstone project as a student in the Bachelor program 'Global Responsibility & Leadership' at the University College Fryslân.

Before you start the questionnaire, you are asked to give formal consent for your participation.

**Researcher:** Lisa Cockx (Campus Fryslân, University of Groningen)

**Contact:** l.cockx@student.rug.nl, +49 1515 9260444

**Goals of the survey:** Researching the perceptions of climate fiction among the European student population.

With my capstone project, I aim to answer the question: “How can climate fiction motivate people to take climate action?”, this survey will complement the research.

**Confidentiality:** The data collected during this project will be treated in strict confidence. The researcher will analyze the data at the group level and I will not be able to identify you. Data that is published, for example in scientific journals, cannot be directly traced back to you. Fully anonymized data can be shared with other researchers for scientific purposes. Personal

information remains confidential and will not be shared with third parties without your explicit consent. Your privacy is therefore guaranteed.

**Participation is voluntary:** Participation in the project by filling out the survey is voluntary. It is your choice to participate. You can withdraw from the project at any time without giving a reason. Stopping participation will in no way affect you.

**Further information:** If you have any questions now, during, or after the project, you can always email the researcher. If you have any questions or concerns about your rights as a participant, you can contact the Ethics Committee of Campus Fryslan, available at [ethics-cf@rug.nl](mailto:ethics-cf@rug.nl).

**Instructions:** The questionnaire consists of two parts and will take approximately 10 - 15 minutes.

Consent Please tick the box if you consent to participating in the survey.

- I read the terms & conditions of this research and accept them. (1)

Page Break

Age How old are you?

0 10 20 30 40 50 60 70 80 90 100

Please use the slider to indicate your age.



Country In which country do you currently live?

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Nationality What is your nationality? (It can be more than one)

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Student Are you a student? (bachelor, master, phd, applied science)

- Yes (1)
- No (2)
- Former student (3)
- Other (4) \_\_\_\_\_

Gender What gender do you identify as?

- Female (1)
- Male (2)
- Non-binary / other (3)
- Prefer not to say (4)

Familiarity Have you heard of climate fiction before?

- Yes (1)
- No (2)
- Not sure (3) \_\_\_\_\_

Display This Question:

If Have you heard of climate fiction before? != No

Familiarity 2 If yes, which book(s) have you read and what was your experience with it?

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Page Break

Definition Climate fiction is a literary subgenre of science fiction and is used as an umbrella term for literature that deals with climate change.



It addresses future scenarios following climate change, can answer 'what if?' questions and explores pathways of the future.

For more information on climate fiction, click [here](#).

The goal of this survey is to investigate the perceptions of climate fiction among the European student population and to find out whether climate fiction can motivate climate action.

**Introduction** Please answer the following questions with your own opinions. There are no right or wrong answers.

**Q1** In what way can climate fiction trigger emotional responses about climate change? Please elaborate.

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**Q2** Do you think climate fiction could motivate to take climate action? Why? How? Please elaborate.

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**Q3** Do you think climate fiction could help to learn more about climate change? Why? How? Please elaborate.

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Q4 Should climate fiction be covered in higher education? Why? Why not?

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Q5 Would you be interested in learning about climate fiction throughout your higher education?  
Why? Why not?

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Page Break

End Thank you very much. I greatly appreciate your participation!

Your answers will be used to evaluate the perception of climate fiction amongst European students and to find out whether climate fiction can motivate climate action.

If you have any further questions, do not hesitate to contact me using the following email address: [l.cockx@student.rug.nl](mailto:l.cockx@student.rug.nl)

End of Block: Default Question Block